Content

Section 17
Uintah Basin Plan

Utah State Water Plan

Water Conservation

When Utah's pioneers had to draw water from a well or carry it from the creek, conservation and respect for the scarcity of water was a way of life.

17.1 Introduction

This section discusses conservation ideas and their significance to water planning. The need for water pricing strategy to provide stable revenues and provide incentives for water users to improve efficiency is also addressed as an important part of any conservation program.

Water conservation planning has been required by legislation recently passed by the state legislatures (HB 153). Water conservancy districts and water retailers must submit a water conservation plan if they serve more than 500 connections.

As this generation looks to the future from the perspectives of cultural traditions and strong economic growth, it has become aware of the need to conserve water. Water sources presently being developed are expensive. New sources will be even more costly. The time to think about and teach conservation has come. Fortunately, water development in the basin has kept ahead of water needs in modern times.

People can achieve significant water use reductions when they understand the reasons to conserve. Communities have shown a willingness to temporarily reduce water use during times of drought. Public education to teach the benefits of carrying out long-term water conservation programs will prepare people to support them as the need arises. A well-managed water conservation program may postpone the need for building new facilities and finding additional supplies.

Effective conservation programs combine measures designed to reduce the demand for water with measures to improve efficiency of delivery systems. Demand reduction measures include devices and practices employed by water users. It also includes pricing policies that discourage overuse and provide incentives for users to use their water more efficiently.

17.2 Background

The Colorado River Salinity Control Program has provided incentives for converting to sprinkler irrigation. Under this program, farmers and ranchers have increased the amount of land under sprinkler irrigation to become more efficient and to increase profits.

City councils and district boards help determine whether their citizens have incentives to use water efficiently by the way water prices are set. Table 17-1 shows the water rates (prices) for selected communities.

The selected communities follow a common practice of pricing water with a substantial base charge, a base allocation of 8-12,000 gallons, and a flat fee for all water used in excess of the base allocation.

Of the communities shown, Manila, Tridell and Duchesne residents have the least monetary incentive to use water efficiently. The remaining communities have more incentive to be efficient because wasted water carries a significantly higher price. But all of the systems should make major changes in their overage charge to encourage water conservation.

17.3 Water Conservation Opportunities

While much has been done to increase efficiency of water use, there are opportunities to do

Table 17-1
Uintah Basin
Water Rates For Selected Communities

City/Town	Base Charge ($)	Base Allocation (gallons)	First Overage to 20,000 ($/1,000 gallons)	Second Overage 20,000+ ($/1,000 gallons)
Duchesne	19.50	10,000	.85	.85
East Duchesne	35.00	10,000	1.00	1.00
Fruitland	30.00	10,000	2.00	2.00
Maeser	13.00	10,000	1.30	1.30
Manila	20.00	12,000	.22	0.22
Neola	21.50	8,000	1.19	1.19
Roosevelt	17.00	10,000	1.19	1.19
Tridell	15.00	10,000	.50	.50
Vernal	12.00	10,000	1.10	0.90

more. Inefficiencies can be found in several areas of water use.

17.3.1 Agricultural

Opportunities still exist to improve the conservation of water used for irrigation. Canals can be combined, piped or lined and those farming who are still flood irrigating can be encouraged to convert to sprinkler irrigation.

The Colorado River Salinity Control Program has assisted farmers and ranchers in purchasing sprinkler systems that conserve water and minimize the amount of soil-leached salt that eventually ends up in the Colorado River System.

17.3.2 Residential

Opportunities abound for residential water conservation. Appliances that use water efficiently, such as low-flow toilets and showers, could be installed. A water-wise landscaping design using drought-tolerant plants, rock or hardscaping (patio) could be used to replace or reduce large lawns or open areas. More efficient use of water for landscaping, such as frequency of watering and limiting watering during midday (10:00 a.m. to 6:00 p.m.), could be practiced.

17.3.3 Municipal

Municipal water could be conserved by metering and charging for water delivered to parks, schools, golf courses and cemeteries. Computer monitoring and control systems are also available which can shut down a part of a system where malfunctions occur and send a warning to a central control facility. Several of these systems are now in operation in Utah. Leak detection programs may enable municipalities to reduce water lost. Many opportunities exist to conserve treated culinary water by substituting low quality water for irrigating lawns and gardens.

Low water-using plants are available to beautify landscapes in a municipal setting. When combined with state-of-the-art irrigation management systems and incentive pricing schedules, significant water savings can result.

17.3.4 Commercial

Opportunities for conserving water at commercial facilities are also available, but economic feasibility is questionable in some cases.

17.3.5 Industrial

Water is metered to all industries that are on public municipal systems. Opportunities exist for conserving water through the price structure for those on metered public systems. Water conservation may not be an issue for those industries on self-supplied systems. Recycling, such as from power plant cooling towers, and process modifications can be a good water conservation alternative.

17.3.6 Wastewater Reuse

Effluent from wastewater treatment plants may be used for many applications such as lawn and garden irrigation, golf course watering and agricultural. Additional treatment (tertiary) may be required. Roosevelt is already using reclaimed water for lawn application on its golf course.

Wildflowers in the Uintah Basin

17.3.7 Methods and Strategies

Water conservation objectives can be achieved by regulation or by incentives. An example of such regulation is the state law which mandates all new construction will have low-flow appliances and fixtures.

Incentive programs include water pricing schedules that increase the unit costs as water use goes up. Public and private water providers should compare the cost of developing new sources with the cost of purchasing and installing low-flow fixtures for their customers. The Water Conservation Credit Program contained in the Central Utah Project Completion Act is a combination of regulation and incentive programs.

Conjunctive use of water supplies, also called "joint use," is a strategy where use of surface water is coordinated with use of groundwater. Where both water sources are available, groundwater can be allowed to accumulate during wet years and then be pumped in dry years to supplement surface water supplies. This is an excellent example of wise use because it manages the total water supply, thus maximizing system efficiency.

17.3.8 Conservation Impacts

Conservation impacts have not been modeled for the Uintah Basin. Based on modeling done in other areas, installing efficient plumbing fixtures reduces water use by about 8 percent.

17.4 Central Utah Project Water Conservation Credit Program

The Central Utah Project Completion Act provides strong incentives for water conservation. Objectives of the conservation incentives include increasing efficiency in water use and to provide instream flows for fish and wildlife.

Water management improvement studies discussed in Section 9 include a Water Conservation Credit Program as part of the Central Utah Project. The purpose of the credit program is to identify, evaluate, prioritize and implement water conservation projects included in the *Water Management Improvement Plan*. The goal of the program is to conserve 49,622 acre-feet of water annually. Up to 65 percent of costs for each project placed on the active inventory may qualify for federal grants. The remaining 35 percent must come from local or state funds. Congress authorized $50 million in federal funds for this program. The Central Utah Water Conservancy District will annually evaluate the effectiveness of the credit program and may adjust any section as necessary. Project requirements and evaluations will not differ between proposed projects in any given period when two or more projects are being compared.

Any person, group or organization with an idea for a project that conserves water is eligible to participate in the Water Conservation Credit Program. Not all projects submitted will be selected for funding and implementation. All projects must complete all elements listed in the Water Conservation Credit Program document dated July 1993. A copy may be obtained from the Central Utah Water Conservancy District.

17.5 Public Education

Water education provides an excellent approach to help children learn how to be responsible citizens in terms of water issues. As they learn about water, they gain a respect for this resource that will become more and more important as water-related issues become prominent. Informed citizens would be better able to make decisions regarding water issues. The purpose of the Division of Water Resources Water Education Program is to educate students in grades K-12 about water. The children, in turn, learn to make decisions based on a knowledge of water and its origins.

Water education is achieved through various means. The Division of Water Resources is the custodian of the international water education program called Project WET (Water Education for Teachers). Project WET workshops are held throughout the state in order to train educators to use the collection of 90 innovative, interdisciplinary activities. Teachers are generally enthusiastic about teaching various aspects of water, and Project WET is a good tool for them to use. The program fits into a wide range of curricula from science to social studies.

The annual Young Artists Water Education Poster Contest is an event which continues to be the highlight of October, which is Water Education Month. Children in grades K-6 participate in this statewide contest each year. Themes chosen each year all relate to water as a resource.

17.6 Issues and Recommendations

There is growth in some areas which makes conservation an important component of the plans for meeting future needs. Three policy issues are discussed below.

17.6.1 Community Water Management and Conservation Plans

Issue - Every community should have plans for meeting future growth demands.

Discussion - Developing additional sources of water for residential use is costly due to restrictions on development. Conserving high quality water sources to serve portions of future growth will be increasingly competitive with the development of new supplies. State legislation (HB 153) changed the 1999 Act to exempt all water retailers with less than 500 connections. It also requires water conservation plans to be updated every five years.

The 1997 Water Conservation Plan Act requires all conservancy districts and water retailers serving more than 500 connections to prepare water conservation plans.

Water suppliers need to identify conservation goals in relation to supplies and demands. Alternatives to provide water to meet projected demands should be identified. The Division of Water Resources has recently completed an inventory of present supplies and system capacities and has estimated projected demands. Refer to Section 11 for data on these items. This can be the basis for preparing a water conservation plan for each community. Guidelines for preparing water conservation plans can be obtained from the Division of Water Resources.

Recommendation - Water management and conservation plans should be developed by all cities and towns.

17.6.2 Water Conservation Landscaping and Irrigation

Issue - The use of water-conserving landscapes can reduce water use.

Discussion - Landscapes use a major portion of the culinary water in most communities. Extensive turf, such as in yards, school grounds, park and golf courses has become the normal landscaping practice. Research reveals that most of these turf areas are over watered, wasting up to 50 percent of the water applied. More efficient irrigation and reduced turf acreages can conserve water and still maintain appealing, attractive landscapes

Water efficient landscaping uses a combination of native plants, low water-using exotic or imported plants, mulched flower beds, hardscaping (decks, patios and rock gardens), and smaller selective turf areas to achieve a pleasing mix. Correctly designed landscaping can also meet the needs for family recreation and entertainment areas along with beautification. A list of low water-using plants applicable to the Uinta Basin can be obtained from nurseries and landscape designers in the area. In addition, the Division of Water Resources and Utah Extension Service have similar information.

New residential construction lends itself best to low water-using landscapes. Installation is more expensive than the current typical landscaping, but it will achieve an aesthetic, functional design. Installation costs can be recaptured through more economical operation and maintenance outlays. Replacing existing landscaping can be very costly; however, it does provide an opportunity to redecorate the outside areas while conserving water. Feasibility will depend on the cost of water and individual desires. Tax incentives can also be used to encourage use of low water using landscapes.

Recommendation - Communities, especially Roosevelt, Vernal and Duchesne, should conduct water audits on large turf areas and install water conserving landscape demonstration projects on city property and consider adopting a landscape ordinance.

17.6.3 Water Pricing

Issue - Water rate schedules can affect water use.

A pricing strategy may be among the most powerful conservation tools at a water utility's disposal. Cities and water districts are finding certain rate schedules can help modify customer behavior and meet conservation goals. Organizations responsible for maintenance of large areas of turf should be billed for the cost of water, even if it is the municipality. This would bring about recognition of the cost of water.

Conservation rate schedules should have the following characteristics:

Equity - Each customer group will be treated the same, or must feel they are doing no more or less than any other customer group. Each customer group may be assigned a goal which defines the upper limit of efficient water use. For residential customers, the goal is based on the number of people per household and landscape water needs.

Revenue Stability - This will avoid the decrease in revenue that traditionally accompanies conservation actions by customers. To avoid the rise and fall of revenues directly linked to water sales, 100 percent of fixed cost of a water system may be recovered with a monthly service charge. Charges for water used as a commodity are calculated separately. These will cover variable costs of deliveries, such as pumping and treatment chemicals. With all fixed costs covered by the service fee, revenues during droughts and periods of wet weather are adequate.

Credibility - The rate structure should be based on defensible information that is logical, simple and credible in the eyes of the customers. Success of any rate structure rests on the perception by customers that the system is fair and based on scientific principles. Credibility is also gained by providing customers data on water needs based on lot size, continuous customer education about the rates, incentives, penalties, and the need for water efficiency.

Building a Conservation Ethic - Utah's water supply and growth analysis by the Division of Water Resources shows conservation must be practiced now to delay expensive new water investments in the short term and chronic shortages in the future. Setting customer goals and providing pricing incentives that convey a clear conservation message builds a water efficiency ethic among customers. Through continuing education, customers generally understand that wasted water is expensive water. A rate structure with steep price increases above a base rate sets a price on inefficient water use. The combination of an equitable, logical and credible rate structure with price incentives to achieve goals, starts the process of building a long-term water conservation ethic.

Focusing efforts on helping culinary water users achieve low water bills along with keeping rates as low as possible addresses the most fundamental issue in the minds of customers. While introduction of a conservation rate structure may increase phone calls and visits from customers, it increases the opportunity for culinary water providers to impact customers in a positive way. Customer calls can provide valuable information for correcting account information on number of people served and landscaped area. This also provides opportunities for explaining how the customer can improve landscape watering or indoor water use practices.

The conservation impact of a well thought out conservation rate structure by public water suppliers may save up to 15 percent for residential users and up to 45 percent for landscape irrigation. Rate structures that penalize high water use with

increased rates may generate excess revenues for funding other conservation programs. This occurs because a 10 percent increase in price will cause a decrease in use of something less than 10 percent.

Under the Central Utah Project Completion Act, the Central Utah Water Conservancy District completed a study of wholesale and retail pricing to encourage water conservation. This study is contained in the *Report on Water Pricing Policy Study -- 1995*. It focused on ways to conserve water by reducing demand via various pricing mechanisms.

The study examined policies for irrigation water pricing, wastewater pricing, wholesale and retail culinary water pricing, and conservation pricing. The experiences of other water-constrained communities were also examined. The rate structures evaluated include uniform rates, seasonal rates, drought year surcharges, increasing block rates, ratchet rates, marginal cost pricing and goal-based rates. The study pointed out that changes in pricing policies are likely to gain greater public acceptance if they are phased in over time.

Recommendation - Local water providers should adopt water rate schedules that encourage water conservation. ❑